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| 10/632,570 | 08/01/2003 | Jhon-Jhy Liaw | TSM03-0196 | 6324 |
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| SLATER & MATSIL, L.L.P. 17950 PRESTON ROAD, SUITE 1000 DALLAS, TX 75252 | | | EXAMINER VINH, LAN | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/632,570

Applicant(s)

LIAW, JHON-JHY

Examiner

Lan Vinh

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/29/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-16 and 18-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 and 18-27 is/are allowed.
- 6) ☒ Claim(s) 1-5,7-15, 28-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/29/2006 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5, 7-15, 28-38 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not provide a positive support for the newly added limitation of "the inactive regions being minimally etched", as recited in claims 1, and a guideline to what is defined by "minimally etched". In the contrary, fig. 2e in the instant specification shows that the inactive regions 210 are

completely oxidized not minimally etched. Claims 2-5, 7-15 are rejected under 112, first paragraph because they depend on claim 1

The specification does not provide a positive support for the newly added negative limitation of " the inactive regions being substantially not etched", as recited in claims

28. According to the MPEP: 2173.05(i) Negative Limitations

Any negative limitation or exclusionary proviso must have basis in the original disclosure.

If alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See *In re Johnson*, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) ("[the] specification, having described the whole, necessarily described the part remaining."). See also *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983), *aff'd* mem., 738 F.2d 453 (Fed. Cir. 1984). The mere absence of a positive recitation is not basis for an exclusion. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claims 29-38 are rejected under 112, first paragraph because they depend on claim 28

3. For the purpose of examination, the limitation of " the inactive regions are minimally etched" is best understood as the inactive regions are slightly etched/ not etched

Claim Rejections - 35 USC § 102

Art Unit: 1765

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 5, 8-11, 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Gopalan et al (US 6,794,269j)

Gopalan discloses a method of isolation of active islands on a SOI device. The method comprises the steps of:

applying a mask layer 24 (SiN having a thickness of 500 angstroms) to a substrate 20, the substrate 20 may be a SOI (col 5, lines 50-55; col 6, lines 55-60; fig. 3), which reads on applying a mask to an active layer, the active layer being on an underlying layer

patterning the mask layer 24 to expose/define masked areas/active regions and unmasked/inactive regions of the active layer (fig. 3)

oxidizing the substrate 21 including the unmasked/inactive regions so that the masked/active regions of the layer 20 are isolated from each other, the unmasked region/inactive regions are not etched/minimally etched (col 8, lines 40-45; figs. 4-5)

Regarding claim 3, Gopalan disclose the step of partially removing the layer 20 in the unmasked regions/inactive regions (fig. 5)

The limitations of claims 2, 5, 8, 10, have been discussed above

Regarding claim 9, Gopalan discloses the step of removing the layer 24/mask layer on the active layer after the oxidizing (fig. 10)

Regarding claims 14-15, Gopalan discloses performing the oxidation at 1000 degree C to form a oxide layer having a thickness of 500 angstroms (col 8, lines 66-67; col 9, lines 35-43)

6. Claims 28-31, 33-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Gopalan et al (US 6,486, 038)

Gopalan discloses a method of isolation of active islands on a SOI device. The method comprises the steps of:

applying a mask layer 28 to a substrate 20, the substrate 20 may be a SOI (col 5, lines 50-55; col 6, lines 55-60; fig. 3), which reads on applying a mask to an active layer of a SOI, the SOI having a substrate layer, and insulator between the active layer and the substrate layer

patterning the mask layer 24 to expose/define masked areas/active regions and unmasked/inactive regions of the active layer (fig. 3)

oxidizing the SOI substrate /wafer such that the oxidized areas of the unmasked active layer/active layer in the inactive region extend through the insulator of the SOI the unmasked/inactive SOI including the insulator is covered by the oxide layer/not exposed, the unmasked region/inactive regions are not etched/minimally etched (col 8, lines 40-45; figs. 4-5)

Regarding claims 29, 34, Gopalan discloses patterning the mask layer with

photoresist (col 7, lines 30-35)

Regarding claims 30-31, Gopalan discloses that the mask layer 28 comprises SiO and SiN layers having a thickness of 500 angstroms (col 7, lines 5-15)

Regarding claims 33, 37, Gopalan discloses performing the oxidation at 1000 degree C to form a oxide layer having a thickness of 500 angstroms (col 8, lines 66-67; col 9, lines 35-43)

Regarding claim 35, Gopalan discloses the step of removing the layer 24/mask layer on the active layer after the oxidizing (fig. 10)

The limitation of claim 36, have been discussed above

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4, 7, 12-13, 32, 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gopalan et al (US 6,749,269) in view of Tseng (US 2002/0090763)

Gopalan method has been described above. Unlike the instant claimed invention as per claims 4, 32, Gopalan fails to disclose the specific thicknesses of the active layer, the oxide and nitride masking layer

Tseng discloses a method of forming a substrate in a SOI wafer comprises the step

Art Unit: 1765

of forming a silicon/active layer having a thickness of 1000 angstroms (col 2, lines 1-5)

One skilled in the art at the time the invention was made would have found it obvious to modify Gopalan method by forming an active/silicon layer having a thickness of 1000 angstroms in view of Tseng because it is conventional in the art to form a silicon layer having a thickness of 1000 angstroms as taught by Tseng

Unlike the instant claimed inventions as per claims 12-13, 38, Gopalan fails to disclose using furnace anneal process to perform the oxidation step

Tseng also discloses performing an oxidation process using furnace oxidation process (paragraph 0018). One skilled in the art at the time the invention was made would have found it obvious to modify Gopalan method by using a furnace anneal process to perform the oxidation step because it is conventional in the art as taught by Tseng

Allowable Subject Matter

9. Claims 16, 18-27 allowed.

The reasons for allowance of claim 16 has been discussed in the advisory action (mailing dates 11/17/2006)

Response to Arguments

10. The applicants argue that the limitation of "oxidizing the inactive regions of the active layer such that the active regions of the active layer are electrically isolated from each other, the inactive regions being minimally etched." is not disclosed in the prior art references. This argument has been considered but are moot in view of the new

Art Unit: 1765

ground(s) of rejection based on Gopalan et al (US 6,794,269) since Gopalan discloses a step of oxidizing the substrate 21 including the unmasked/inactive regions so that the masked/active regions of the layer 20 are isolated from each other, the unmasked region/inactive regions are not etched/minimally etched (col 8, lines 40-45; figs. 4-5)

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV
May 7, 2007